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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/928,663	08/14/2001	Kenji Sato	NEC0IP165-TWb	6411

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EXAMINER
LEUNG, QUYEN PHAN

ART UNIT	PAPER NUMBER
2828	

DATE MAILED: 06/19/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/928,663	SATO, KENJI	
	Examiner	Art Unit	
	Quyen P. Leung	2828	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____ .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-13 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-3,12 and 13 is/are rejected.

7)☒ Claim(s) 4-11 is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 4 .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-3, 12-13 are rejected under 35 U.S.C. 102(b) as being anticipated by Suzuki et al(5,347,526). Regarding claim 1, Suzuki et al inherently discloses the claimed invention, because applicant's claim 1 of a method suggests a semiconductor laser comprising a phase-shifted region of a diffraction grating and having a normalized coupling coefficient kL of 2 or more and Suzuki et al teaches it as evidenced by col. 9 lines 50-60. In Applicant's specification, particularly paragraphs [0051] through [0056], applicant appears to credit the kL of 2 – 3.5 for enabling the claimed feature of "shaping the waveform of the optical signal to be transmitted through the optical fiber to increase the frequency thereof before the waveform is stabilized when the optical signal starts increasing in level at the time the optical signal is applied to the optical fiber." It is noted that the optical fiber is implicit in Suzuki et al, as evidenced in columns 1 and 2, with Suzuki et al's discussion of a coherent light transmission system and optical FDM, and is explicitly discussed in col. 11 lines 46-50. It is further noted that while Suzuki et al does not mention "normalized" when discussing the coupling coefficient kL, it is inherent in Suzuki et al that the coupling coefficient kL is the normalized coupling coefficient, as

claimed by applicant, because applicant's definition of normalized coupling coefficient is the same as that of Suzuki et al's—kL.

Regarding claims 2-3, 12-13, Suzuki discloses the claimed invention of a semiconductor laser (figures 5-8) comprising a diffraction grating (25, 302) and an active layer (2,303). Regarding the normalized coupling coefficient of at least 2.0, see col. 9 lines 50-60. Regarding the diffraction grating (25,302) having a phase shift region for achieving a phase shift of at most .lambda./4, see col. 17 lines 48-50 and col. 19 lines 15 through 68. Regarding the active layer having a gain which is saturated as a carrier concentration in the active layer increases, note MPEP 2114:

> **APPARATUS CLAIMS MUST BE STRUCTU-RALLY DISTINGUISHABLE FROM THE PRIOR ART**
>
> >While features of an apparatus may be recited either structurally or functionally, claims< directed to >an< apparatus must be distinguished from the prior art in terms of structure rather than function. >*In re Schreiber*, 128 F.3d 1473, 1477-78, 44 USPQ2d 1429, 1431-32 (Fed. Cir. 1997) (The absence of a disclosure in a prior art reference relating to function did not defeat the Board's finding of anticipation of claimed apparatus because the limitations at issue were found to be inherent in the prior art reference); see also *In re Swinehart*, 439 F.2d 210, 212-13, 169 USPQ 226, 228-29 (CCPA 1971);< *In re Danly*, 263 F.2d 844, 847, 120 USPQ 528, 531 (CCPA 1959). "[A]pparatus claims cover what a device *is*, not what a device *does*." *Hewlett-Packard Co. v. Bausch & Lomb Inc.*, 909 F.2d 1464, 1469, 15 USPQ2d 1525, 1528 (Fed. Cir. 1990) (emphasis in original).

Regarding the laser further comprising a resonator, the phase shift region being disposed centrally in the resonator, note col. 10 lines 65-66 and col. 17 line 50-52 for the teachings of the diffraction grating 25, 302 having a phase shift region 26, 311 located at the midpoint in the resonator of the laser.

Regarding the semiconductor being a communication light source in a digital optical communication system, see col. 1 lines 15 through col. 4 line 20.

Allowable Subject Matter

3. Claims 4-11 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

4. The cited prior art do not fairly teach or suggest the combination of (a) the active layer having a MQW with one of surface irregularities (see applicant's figure 9), two stage potential quantum wells (see applicant's figure 10), non-radiative recombination layer (see applicant's figure 11), and an active layer thicker at the center of the resonator (see applicant's figure 12), and (b) a diffraction grating with a phase shift of at most .lambda./4 and having a normalized coupling coefficient kL of at least 2.0.

Conclusion

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

a. Mito (4,794,618) teaches a phase shift of .lambda./8 to 3.lambda./16.

b. Flynn et al (5,012,484) teaches a coupling coefficient kL of 1.6-2.5 (see abstract).

c. Kinoshita (5,321,716) teaches a normalized coupling coefficient of less than 1.25 to suppress hole burning at phase shift region.

d. Takano (US 5,790,578) shows MQW with non-radiative carrier recombination layer in figure 8B.

e. Meyer et al (US 5,793,787) shows MQW with non-radiative carrier recombination layer in figure 3.

f. Ougazzaden et al (6,141,363) shows in its figure 5 a MQW with 2 stage potential quantum well.

g. Ukita (US 6,470,039 B1) shows an active region with surface irregularities.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Quyen P. Leung whose telephone number is (703) 308-0545. The examiner can normally be reached on 8:30-5:00, M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Paul Ip can be reached on (703) 308-3098. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-7724 for regular communications and (703) 308-7724 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

Quyen P. Leung
Primary Examiner
Art Unit 2828

QPL
June 13, 2003